Oakland Shines

Final Report

Prime Contractor Name: Quantum Energy Services and Technologies

Contract Agreement Number: 400-09-011

Contract Term (reporting period): June 30th, 2010 – April 30th 2012

Project Manager: Brendan Havenar-Daughton

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ARRA SEP contracts have not been granted confidentiality status for any contract deliverables, therefore, the Final Report is a public document and must be completed before the contract termination date of the contract. The contractor should use the outline below to complete the report. Each contractor should receive approval from their Commission Contract Manager to ensure the Final Report meets the needs of each individual contract.

Final meetings between the contractor and the Energy Commission will be at the discretion of each Commission Contract Manager.

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I EXECUTIVE SUMMARY:

a. Program Background and Approach

i. Background

The Oakland Shines Program (Program) deployed ARRA resources in the dense, 120-block area of Downtown Oakland (Program Target Area) primarily during 2011. Program offerings included some of the most emerging HVAC and lighting technologies on the market today. The Program targeted every business in Downtown Oakland, from the 'mom and pop' corner stores to the large office buildings, offering a free comprehensive energy audit which identified major opportunities to install advanced energy efficient technologies. Team members worked with business owners to recognize cost-effective solutions that significantly reduce overhead energy costs. Qualifying businesses in the Program Area received financial incentives of up to 90% for installing a variety of energy efficiency technologies.

Oakland is an economically disadvantaged community; with the unemployment rate almost double the national average. One strategy to overcome the economic challenges is through energy efficiency programs that reduce energy costs for businesses. The Oakland Shines Program created numerous opportunities for small to medium sized contractors as well as non-profit energy efficiency companies. The program also provided on the job training for Laney College students with aspirations in joining Oakland's Green Jobs Corp. The Program team offered numerous training sessions for contractors, which brought them up to speed on the latest lighting and HVAC technologies and provided specialized training to an established contractor network for the emerging technologies being offered by the Program.

ii. Approach

The Program deployed a saturation campaign using multiple market actors to increase the awareness of building owners of available energy efficiency opportunities. Most building owners participating in the program moved from being unaware of opportunities to actually considering the installation of energy efficient measures. Team members conducted an extensive outreach campaign, visiting all ground-floor businesses within the program area with a representative of the local IOU, PG&E. The presence of an IOU representative during the outreach process was indispensible. A main strength of the Program was the ability to offer high cash incentives by leveraging existing IOU incentives with ARRA dollars. In many cases the program was able to offer a 90% incentive on the total project cost. Given that many of the measures are in early stages of market deployment offering the higher incentive was critical. These measures are more expensive, they have limited performance records and are generally perceived as being riskier investments.

Key features of the Program include 1) close collaboration with the East Bay Energy Watch (EBEW), an existing IOU-funded Local Government Partnership (LGP), 2) a focused saturation campaign using multiple market actors, and Incentives specifically targeted at select new technologies. These market actors include the City of Oakland Community and Economic Development Agency (CEDA) staff, Oakland's Business Improvement Districts, BOMA, the Oakland Chamber of Commerce, Pacific Gas and Electric Company (PG&E), and local installation contractors. The program tracked and recorded all

outreach contacts so that additional services could be provided to non-participants through EBEW at a later date.

b. How project was organized

The Program was administered by QuEST, who managed several subcontractors and program partners to deliver a successful program. QuEST engineers conducted all HVAC building audits, presented findings, provided installation assistance and processed project incentives. On-the-ground outreach and marketing for buildings less than 100,000 Sq Ft was carried out by Community Energy Services Corporation (CESC). CESC conducted the majority of lighting audits for the Program and helped train installation contractors on the specifics of new and emerging technologies. PG&E assisted CESC with the on-the-ground outreach campaign.

c. Organizational Structure under the Contract, Prime and Sub-contractors.

QuEST – Principle Program Administrator: Supervised and managed all program activities from outreach to implantation to verification.

CESC – Sub-contractor: Conducted on the ground program outreach and marketing, as well as comprehensive lighting audits. Al.

City of Oakland – Sub-contractor: Principle Program Partner – Conducted targeted program outreach to the downtown Oakland business community. Supported door to door effort by distributing program materials and speaking with business owners in select parts of the downtown district. QuEST held monthly update meetings with the City of Oakland to ensure that Program decisions were consistent with the goals of the Principle Program Partner.

Phoenix 1 – DVBE Sub-contractor: Created Program marketing materials, both print and website collateral. These materials included banners, info-sheets, the interactive website, and a variety of program 'give-aways'.

Circle Point – Sub-contractor: Logo design, Case Study template design.

II. GOALS:

a. Listed below are the original program goals as stated in the Program Implementation Plan and Standard Agreement 400-09-011.

Original Goals	Actual Accomplishment	Barriers to Goal Achievement
1. 8 ,000,000 kWh of energy savings	➢ 4.5 Million kWh of energy savings (estimated as of 3/16/12) ➢ Satisfied 10 Million BTUs/$1000 spent (DOE goal)	➢ Project was designed for a 24 month implementation period which was not realized. The actual implementation period was 16 months ➢ Project Cost-effectiveness became a secondary goal to incentive distribution at the request of the CEC
2. 152,000 Therms of energy savings	➢ 68,606 Therms of energy savings ➢ Satisfied 10 Million BTUs/$1000 spent (DOE goal)	➢ Project was designed for a 24 month implementation period which was not realized. The actual implementation period was 16 months ➢ Project Cost-effectiveness became a secondary goal to incentive distribution at the request of the CEC
3. Significantly advance the energy efficiency level of the downtown corridor by increasing saturation of advanced lighting and HVAC technologies particularly amongst Class B and C properties	➢ Goal Achieved	➢ None
4. Leverage existing workforce development investment, such as nationally recognized Oakland Green Jobs Corps.	➢ Goal Achieved	➢ None
5. Improve on-going site-level energy monitoring in the downtown Oakland corridor to increase the proper commissioning and persistence of the installed measures	➢ Partially Achieved	➢ Project was designed for a 24 month implementation period which was not realized. The actual implementation period was 16 months ➢ In order to properly deploy a monitoring based commissioning program, projects must be completed well before the program

Continued: Improve on-going site-level energy monitoring in the downtown Oakland corridor to increase the proper commissioning and persistence of the installed measures	➢ Partially Achieved	end date. Due to a late start, this goal became unachievable at the onset of the program ➢ The installation of Wireless T-Stats at 4 sites has laid the foundation for better energy management and RCX for these sites.
6. Saturate all 18,000,000 square feet of commercial property in the downtown Oakland corridor with energy efficiency outreach	➢ 90% of Goal Achieved (ground floor businesses and large office buildings)	➢ There was some challenge experienced in reaching tenants above the ground floor (when property managers could not be reached for these facilities)

III. Accomplishments by Goal:

Goal 1: 8,000,000 kWh of energy savings

Activities Undertaken:

Oakland Shines used a list of Advanced Lighting technologies put together through the California Energy Commission's PIER Lighting Research Program (LRP). These advanced lighting technologies were the only allowable measure for the Oakland Shines rebates. As of April 16, 2012, the Oakland Shines program had recorded a total energy savings amount of **4,498,683 kWh**.

Technology	Units	Costs	kW	peak kW	kWh
Wireless lighting controls	Sensor	$100	0.153	0.0306	344
Simplified Daylighting controls	Sensor	$250	0.204	0.0408	918
Advanced LED Down Lights	Fixture	$200	0.093	0.0186	419
SMART Wall Pack Fixtures	Fixture	$875	0.118	0	1809
SMART Parking Lot Bi-Level Fixture	Fixture	$875	0.118	0	1421
Integrated Office Lighting System (IOLS)	Desk	$350	n/a	0.113	509
Refrigerator Case LED Lighting with Occupancy Sensors	Door	$316	0.054	0.054	475
Integrated Classroom Lighting System (ICLS)	Classroom	$4,000	n/a	0.93	2800

Almost all measures were implemented in the Oakland Shines Program, however as the Program implementation developed, certain measures were deemed to be more viable for the targeted businesses. Through outreach in Downtown Oakland, two measures were most applicable to the largest number of customers:

- LED Case lighting: In small markets and grocery stores, LED case lighting was a needed and cost effective retrofit. There are many small markets in Oakland where lighting is an easy way to brighten up their store while becoming more efficient. As a result, **LED case lights were installed more than any other measure.**

- Bi-level fixtures: These fixtures were applicable to stairwells in many of the large buildings in downtown Oakland as the lights are required by code to be on 24 hours a day, and many parking garages. This measure, being both cost effective and providing large energy savings, provided the most energy savings of the applied technology in Oakland Shines.

The remaining measures were implemented, but on a much smaller scale:

- LED Down lights had a wide applicability in many businesses in Oakland. However, to the meet goals of cost effective energy savings, LED Down lights were specified mainly when replacing incandescent Downlights, not CFLs.
- The Integrated Classroom Lighting and Integrated Office Lighting systems did not have many opportunities for installation. However, one Integrated Classroom Lighting system was installed at a community College in Oakland, Laney College. Laney installed integrated occupancy controls, Daylighting sensors, and dimming ballasts in approximately 40 of their classrooms.
- Wireless lighting controls were implemented in several garages and one downtown office building.

Key program outcomes

Certain assumptions made when the program was designed turned out not to be less accurate than initially perceived.

- *Downtown Oakland has inefficient lighting*:

The original territory of the program, the Downtown Oakland Area, was thought to be inefficient with old, outdated lighting technologies. In fact, much of Oakland's office spaces, even Class B & C properties, had been retrofitted to at least current building code, Title 24, standards. With the buildings already retrofitted, there were less opportunity than expected for efficient upgrades and when there was opportunity, the savings were less than originally expected.

- *Fixture Costs and rebate levels*:

There was a time delay of approximately 18-36 months from when the PIER program did their research and the Oakland Shines Program was implemented. In this time, technology changes occurred and many fixture costs came down dramatically. Also, one of the measures, Advanced CFL Downlights, was changed to Advanced LED Downlights, as LED Downlights had surpassed CFL technology in useful life and efficacy.

The rebate levels were based on a percentage of fixture costs, so the rebate levels for many of the measures were too high and were over a $1/Saved kWh threshold, while the goal of the Program was $0.40/Saved kWh. At first, Oakland Shines provided incentives at a fixed rate. For example, replacing a standard 2-lamp T8 fixture with a bi-Level 2-lamp T8 fixture resulted in a $710 incentive. This rebate amount would be applied to each fixture that carried out the same retrofit. Understanding this rebate would be too high and the savings would not reach Program savings goals; Oakland Shines cut this incentive by 50% to $350 per fluorescent bi-level fixture. After a number of projects had received incentives at this rate, it became obvious that too much incentive was still being issued to retrofit

projects compared with the amount of savings realized. As a result, the rebate structure was again adjusted to reflect more justifiable levels of incentive to be issued. Rebates were changed to be based on a $0.40/ saved kWh basis. This rebate change allowed for much more control on the incentives being issued and ensured that we would be more in line with our savings goals.

- ICLS and IOLS would be readily available:

Integrated Classroom Lighting Systems and Integrated Office Lighting Systems technologies identified by the PIER group had only been installed in a few isolated test cases. At the time of Program launch there was no availability of Integrated Office Lighting Systems from a manufacturer. Integrated Classroom Lighting Systems became available but only in the second half of the program cycle. Due to this, Oakland Shines was not able to propose this solution to all applicable customers until late in the Program cycle.

Goal 2: 152,000 Therms of energy savings

Activities Undertaken:

QuEST's mechanical engineering team provided audits for 25 downtown Oakland office buildings. These buildings were audited for emerging HVAC technologies. It was determined early on in the program that a large percentage of these facilities located in downtown Oakland were not good candidates for the HVAC technologies offered through Oakland Shines. There were a number of 70 to 80 year old brick office towers that did not have operational chillers or air handlers, and thus no application for a wireless thermostat. About half way through the program, the target area was expanded to the entire City of Oakland in order to identify other emerging HVAC technology candidates. During this expansion 2 buildings were identified representing large savings in Therms and kWh. Due to program deadlines, these buildings were not able to participate and thus their potential savings were not realized.

The overall Therms savings from Oakland Shines is **67,470 Therms** (as of 3/16/12).

Goal 3: Significantly advance the energy efficiency level of the downtown corridor by increasing saturation of advanced lighting and HVAC technologies particularly amongst Class B and C properties.

Activities Undertaken:

With such a strong rebate and a large pool of deserving small businesses, the LED case lighting measure became our first real target for Oakland Shines. The installation process was quick, had a low cost for the customer, and provided a higher savings ratio to help the program reach its savings goals. The Oakland Shines Program marketed to the retail sector to offer the Refrigerator Case LED Lighting with Occupancy Sensors. This included liquor stores, markets, and gas stations many of which are in Class B and C buildings. There were some case lighting opportunities in downtown Oakland, and significantly more in the surrounding Oakland Shines' territory.

Customers were excited to be presented with this opportunity because without an incentive program like Oakland Shines to assist with driving down the overall project cost there would be no way for them to afford the upgrade to an advanced technology such as LED case lighting. Their positive feedback increased the marketing impact, especially to small businesses. Many new enrollees were referrals from previous customers.

Another target opportunity was with bi-level stairwell fixtures. Class B and C properties often had stairwells with inefficient T12s and were poorly lit. Even properties that had retrofitted to efficient T8s were able to reduce energy consumption with bi-level stairwell fixtures.

Stairwell fixtures are required by code to be on 24 hours a day, so reducing the light output when unoccupied can provided a high level of energy savings.

For every lighting project, the Oakland Shines Program offered a turn-key solution to the business customers to make the installation of the advanced technologies effortless. To encourage adoption of the these technologies, CESC staff offered start-to-finish technical assistance including a review of savings opportunities, specification of appropriate technologies, identification of qualified installation contractors, verification of installation quality, product training and rebate processing.

Key Program Outcomes:

- ✓ Bi-level lighting installed in **over 30 buildings** in Oakland.
- ✓ LED Case Lights Installed in approximately **130 businesses** in Oakland.
- ✓ Leveraged over 500,000 kWh of savings through traditional PG&E programs (See below).

Oakland Shines Leveraged Savings	
kWh from other PG&E programs	**KW** from entire program
538,192	1,149*

*790 KW from lighting measures, 359 KW from HVAC measures.

Goal 4: Leverage existing workforce development investment, such as nationally recognized Oakland Green Jobs Corps

Activities Undertaken:

Through the Oakland Shines QuEST and CESC both deployed independent internship programs. QuEST hired two engineering interns for 6 months while CESC created a Program Assistant Internship Program to give graduates of local Green Jobs Programs in- the-field work experience in energy auditing, marketing and sales. CESC recruited for the Oakland Shines Program exclusively through local Green Jobs Programs: Laney College's Green Jobs Training program, and Rising Sun's Green Energy Training Services (GETS).

The Program Assistant Program consisted of hiring full time employees to perform low level energy auditing, data entry and receive on-the-job training. Three employees were hired through the Program Assistant program.

The engineering internship at QuEST focused on teaching HVAC auditing skills primarily through on the job training experience. Both interns worked for six months, one was hired on full-time while the other was employed at the county of Alameda assisting in a district-wide facility benching marking effort.

The Oakland Shines Program Assistant Internship consisted of two cohorts, Cohort 1 had four interns, and Cohort 2 had two interns. The interns were paid at $16/ hour, working 24 hours a week for four months. The program was designed to give classroom type training as well as real 'on-the-job' experience. Interns were given a Mentor and were trained in all aspects of energy-efficiency and renewable energy auditing and sales.

Training Topics:

Customer Interaction/ Sales:

- Phone and in- person outreach training through the Oakland Shines Campaigns
- Sales training with CESC staff, and through presenting actual proposals to customers through the Oakland Shines Campaign
- Creation of a Case Study of an installed Oakland Shines project
- Use of MS Office, Excel, Word and PowerPoint to create presentations

Energy Auditing:

- Classroom training at CESC's office and PG&E's Pacific Energy Center "Energy Auditing Techniques for Small & Medium Commercial Facilities"
- Field Training by shadowing CESC Auditors, PG&E staff and performing their own energy efficiency audits
- Inspections of installed energy efficient measures at customer sites
- Training in the use of Energy Auditing tools such as: Ballast Discriminators, Electricity Load Meters (Kill-A-Watt), Photopic light meters, and other energy assessing tools
- Database training on CESC's proprietary Energy Management software, QuEST's Energy Project Management Software, and On-Grid, a Solar PV project calculator software

Renewable Energy:

- Field trip to the San Jose Solar Show Case Exhibit to learn about Solar Technology
- Phone surveys with customers interested in Solar PV
- Training in Solar Site Assessments through On-Grid, a solar industry assessment tool
- Customer Outreach and Education regarding Solar PV and Solar Thermal

Key Program Outcomes:

Program Assistant Program:

As of March 2012, all three program assistants have been promoted to more responsible roles within the agency and one employee subsequently pursued a higher level role at another Clean Energy company.

Oakland Shines Internship Program:

As of March 2012, six of the eight graduates are working in the Clean Energy Sector.

Quotes from Interns:

- *"I have attended over 20 business meetings and several field visits. On these visits I learned how to identify HVAC equipment and how they tie together. I assisted the engineers in collecting and deploying data recording devices called data loggers. Overall, this has been an amazing experience for me. I am happy to have this opportunity to expand my knowledge and skill set to be able to continue a path in the Energy Efficiency field."*

  -DeWayne Scurry

- *"I want to express my utmost gratitude about the generosity that you have given me with the opportunity of a hands-on job with pay. Everyone treated me gracefully and professionally."*

  -Wing Ng

- *"What I enjoyed most about the Internship experience was the people, everyone was willing to share their knowledge and experience freely; and the environment, it was energetic while keeping competition to a reasonable level. I got the feeling that everyone wants you to succeed."*

  - Evan Riter

- *"Working with the great people and the positive environment at CESC made coming in everyday something I looked forward to. I learned more than I thought I would about energy efficiency and solar technologies."*

  -Nabil Kazerouni

- *"I had a great time and wish I could stay on!"*

  - Darar Chebaro

Goal 5: Improve on-going site-level energy monitoring in the downtown Oakland corridor to increase the proper commissioning and persistence of the installed measures

Activities Undertaken:

Achievement of this goal is time dependent. In order to properly deploy a monitoring based commissioning program that improves on-going site-level energy monitoring, projects must be completed well before the program end date. Due to a late start, the majority of HVAC projects pushed up against the program end date, leaving little to no time for energy monitoring during the post-installation period. Thus, this goal became unachievable at the onset of the program. Generally speaking, engineers need approx. 3 months of usage data BEFORE and AFTER the installation period. However, the installation of wireless thermostats at 4 sites has laid the foundation for better energy management and RCx at these particular sites, and has provided proof of savings for future adopters of this emerging technology.

Goal 6: Saturate all 18,000,000 square feet of commercial property in the downtown Oakland corridor with energy efficiency outreach

In order to achieve the high goals for Oakland Shines, multiple parties contributed their knowledge about businesses to the Oakland Shines outreach strategy and effort. QuEST, PG&E, City of Oakland, and CESC devised multiple campaigns to inform and enroll targeted groups such as ground floor businesses, large buildings and later, nonprofits and parking structures. As a result of these efforts all of the ground floor businesses were contacted about the Oakland Shines program and many businesses received energy audits and proposals, and completed retrofit projects. By the end of the program, Oakland Shines had exhausted the entire incentive budget – injecting over $3,000,0000 into Oakland's Business Community.

Activities Undertaken

To increase the general awareness of Oakland Shines, advertising and marketing was initiated by QuEST, in partnership with City of Oakland, to ensure that businesses and Oakland residents were aware of the efforts made to make Oakland one of the greenest cities in the US. Advertisement efforts included signage on bus stop shelters, light pole banners, and BART stations. This effort ran throughout the course of the program and coincided with the canvassing campaign. Well known community members and Mayor Quan spoke out at community and business events. Additionally, at several City of Oakland business and energy related events, Program Staff presented Oakland Shines marketing booths with Oakland Shines materials.

The initial outreach campaigns, "Boots on the Ground, "targeted all ground floor businesses within Downtown Oakland's 5 business districts, Jack London Square, Chinatown, Broadway City Center, Gold Coast, and Uptown. This canvassing campaign included a PG&E representative, CESC marketing coordinator, energy assessment project managers and, in Chinatown, a translator. The PG&E representative established credibility, and added another layer of resources when engaging the business owners. Equipped with auditing tools, enrollment information, and a map, they walked into businesses providing information on the Oakland Shines Program and energy efficiency. The canvassing campaign

offered a user-friendly application process available in person which increased the customers confidence and trust in the program. When possible, audits were performed immediately for interested customers. If necessary, CESC and PG&E would follow up with customers for future assessments and other energy related matters. CESC collected relevant marketing information on businesses to prepare for a follow up, or second sweep. The second sweep used the collected information, such as business owner, hours, and contact information, to secure more energy assessments for the businesses missed during the first sweep.

As part of the Oakland Shines marketing effort, CESC worked in the Chinatown area of Downtown Oakland to encourage businesses to perform energy efficient lighting and refrigeration upgrades. Chinatown was expected to have one of the poorest turn outs because of language barrier; however with the aid of 2 Chinese translators, assistance from community groups, Mayor Jean Quan, and word of mouth, this district was the most successfully saturated both in upper story offices and on the ground level. The majority of businesses were very small, but had not previously been approached because of language and cultural barriers. For the business owners to take advantage of the Oakland Shines Program the outreach staff had to be let in the door and understood by the business owner.

Subsequent targeted campaigns were led to include hard-to-reach businesses and structures. These included large buildings, churches, nonprofits, and parking structures where the decision makers were not on site or unavailable to canvassers. All Oakland Shines partners were put to the task of reaching out to large businesses and buildings. They were able to target the buildings that would benefit the most from the Oakland Shines incentives and with the help of consultants, were able to schedule meetings for customized marketing presentations and assessments. These larger customers worked more closely with QuEST's team because their facilities required more assistance from engineers for building systems energy analysis. In another effort, QuEST interns led a calling campaign to nonprofits and churches that were often closed and unavailable during the canvassing. This cold calling proved to be ineffective. For parking structures and lots, a taskforce of QuEST, City of Oakland and CESC, used city maps, visited sites and contacted the appropriate management companies.

IV. Additional Program Accomplishments

a. PG&E Incentive Programs (Leveraged Funding)

As mentioned previously in this report, the Oakland Shines program generated an additional amount of energy savings totaling over 500,000 kWh. These savings were derived from PG&E's Smart Lights Program.

b. AirCare Plus Referrals

The Oakland Shines Program partnered with PG&E's AirCare Plus Program (administered by PECI) to provide no-cost diagnostic HVAC tune-up services to commercial customers. A description of the program is provided by PG&E: During AirCare Plus tune-up services, all major HVAC components will be thoroughly inspected and adjusted for optimal performance and energy efficiency. Even if the unit has received quality routine maintenance, and AirCare Plus certified technician can identify and implement other efficiency opportunities for each of the following HVAC components: Thermostat Controls, Economizer, Refrigerant Charge, and Airflow.

A total of 28 referrals were made to AirCare Plus, leading 5 businesses to participate in the program. A total of 25,000 kWh and 2.75 KW were realized from these "tune-up" projects. The remaining 23 businesses who were determined by PECI to be "non-responsive" will be referred to PG&E's HVAC Quality Maintenance Program by QuEST.

c. PG&E On-Bill Financing

Oakland Shines was able to utilize PG&E's On-Bill Financing (OBF) program for two of the HVAC retrofit projects. OBF is an energy efficiency retrofit loan program that "helps eligible customers pay for energy –efficient retrofit projects with no-interest loans that are repaid through their monthly PG&E bills" (excerpt from PG&E OBF marketing document). This program increased customer confidence in their decision to move forward with their Oakland Shines project. It was noted during the program that nearly all Oakland Shines participants were unaware of these resources offered through the OBF Program. Once PG&E customers learned of the zero percent loan option, most took advantage and followed through with project installation.

d. Key Program Outcomes

Energy efficiency awareness in the Downtown Oakland businesses district has increased dramatically as a result of the Oakland Shines Program. At the close of the program, the downtown area of Oakland was entirely saturated with energy efficiency opportunities. Every business at the ground level had been contacted at least twice, either through canvassing or targeted outreach efforts, and was informed about Oakland Shines by staff and/or marketing materials. Chinatown, which was one of the more difficult neighborhoods to reach, turned out to demonstrate the greatest level of participation due to the Program's focused translation efforts.

The success of Oakland Shines was demonstrated when the program completely allocated all $2.8M of incentive dollars to local businesses, and was reinforced by the fact that Oakland Shines requested, and was awarded, an **additional $250,000** from the CEC to serve interested business owners. This effort capitalized on the success of the program and allowed for greater program participation. A total of **$3,000,500.00 was allocated to local business owners** in the form of cash incentives to offset the high cost of installing emerging technologies in their facilities.

Throughout Oakland, approximately **1500 businesses were contacted**. CESC provided over 600 energy assessments. As of April 16, 2012, 191 businesses had completed at least one project through Oakland Shines involving the installation of emerging technologies. The table below shows program total in detail:

i. Number of energy audits completed	**612**
ii. Amount of PG&E incentives leveraged for emerging technologies (approx.)	**$404,000**
iii. Average retrofit project cost to the property owner	**$22,458**
iv. Average energy savings per project	**23,184 kWh**
v. Number of workers trained	**60 +**
vi. Number of jobs created through program administration (full-time / part-time)	**8 / 9**
vii. Number of energy assessments completed	**600 +**
viii. Number of loans originated / Average loan amount of PG&E On-Bill Financing – Max loan 100K (leveraged financing)	**2/$100,000**

V CONCLUSIONS:

a. Major findings or conclusions

i. It is common that large businesses (generally over 100,000 Sq Ft) are unable to make quick decisions (< 60 days) involving the implementation of energy efficiency projects even when presented with an unusually high financial incentive.

ii. Pacific Gas & Electric's On Bill Financing Program was a critical component in implementation of 50% of HVAC projects (2 out of 4 projects).

iii. The use of language translators was highly beneficial during outreach efforts in the diverse community of downtown Oakland. In Chinatown specifically, language translation was the key to achieving approx. 80% participation of the businesses in this geographic area.

iv. Parking garages are prime candidates for emerging technologies in lighting controls.

v. High-rise office buildings, in the majority of cases, always installed bi-level fixtures with occupancy sensors in their stairwells. NOTE: It is important to consider the minimum light requirements prescribed by fire code before initiating project installation.

vi. There were two components in particular that made the 'on the ground' outreach team highly effective: 1) A knowledgeable outreach team with the ability to explain program details and connect with customer needs, and 2) A representative from the local utility.

vii. A strong relationship between the City and its business community is highly desirable. This program was a great opportunity for the City of Oakland to build upon and strengthen their relationship with the business community. The stronger the relationship at the start, the more successful the program.

viii. The downtown Oakland business district was found to be more efficient than initially predicted.

ix. Any program of this magnitude either 1) needs to build upon existing momentum (in the form of motivated/energy-conscious businesses) created by previous energy efficiency programs, or 2) needs enough time (at least 24 months) to implement this comprehensive strategy.

x. Social media is a hugely powerful marketing tool but without sufficient time for campaign strategies to go 'viral', the impact is diminished.

xi. Small and medium businesses generally have more time to discuss energy efficiency when the project addresses more than one of their needs. (e.g. high utility bills, poor product illumination and flickering lights.)

xii. Program banners hung on light poles throughout the downtown district provides important exposure that supports program credibility.

xiii. Program deadlines paired with constant communication motivate action on behalf of the participant.

b. Best Practices

i. Work closely with city government to identify the most likely early adopters and publish the good deeds of these program participants via all marketing channels.

ii. Reward participants by advertizing their business. Look for creative ways to promote their business that leads them to experience increased sales.

iii. Set strict deadlines and stick to them. Programs should be run as fist come first served.

iv. Clearly set expectations from the initial contact with the customer in order to accurately gage customer interest in project implementation.

v. Employ language translators when working with communities that speak English as a second language.

c. Lessons Learned

i. Administration

1. A program that promotes emerging technologies cannot realize the full potential of its intended impact if not allotted a sufficient amount of time to deliver services.
2. American Recovery and Reinvestment funding intended to stimulate the economy should focus on the *current needs* of the intended recipients in established markets. The list of emerging technologies was not exhaustive when it came to meeting the needs of the business community.
3. The promotion of emerging technologies and the goal of spending funding in a short period of time have proved to be mutually exclusive in program practice. These technologies are not 'shovel ready' nor are they even market proven technologies in many cases.
4. While the Oakland Shines program was able to provide high financial incentives for the installation of emerging technologies, the program was limited by the implementation timeline, preventing greater energy savings and a higher cost effectiveness ratio.
5. It is important to ensure that all participating contractors have a clear understanding of Federal compliance issues – what they are and how they satisfy them. Two projects dropped out of the program towards the end, claiming that paying their workers a prevailing wage carried a higher cost than the financial incentive that was offered.
6. In general, more communication more often is a critical component to managing the collaboration of several different organizations.

VI. TECHNOLOGY:

a. Public release of project information: publications, conference papers or other public release of results:

i. None.

b. Web site or other internet sites that show results of this project

i. Oakland Shines Website – The general program website was used as a marketing, outreach and communication tool. It displayed program achievements, updates and related news briefs and provided potential participants with access to all necessary program paperwork (application, data release forms, etc). It also displayed a Google map of program participation across the program area.

c. Networks or collaborations fostered

i. None.

d. Technologies and techniques developed

i. Fran's Tool – WPT Savings Calculations

e. Inventions or patent applications created

i. None.

f. Other products, such as data or databases, physical collections, audio or video, software or net ware, models, educational aids or curricula, instruments or equipment

i. Oakland Shines is developing a program close-out video that exhibits the programs achievements in the context of the City of Oakland's sustainability efforts. This video will be sent (hard copy) to the CEC (Care of Contract Manager Tony Wong) and will also be available in electronic format.

VII. Verification:

a) A total of **191 projects** were verified by CESC, representing 100% of lighting projects.
b) A total of **51 projects** were verified by QuEST, representing 100% of projects over $10,000 in total cost.

VIII. DELIVERABLES:

Deliverables present in the original contract between QuEST and the CEC are listed below:

Deliverable	Brief Description	Due Date in Agreement	Date Delivered to CEC
1.1.1	Updated Schedule of Deliverables	9/1/2010*	11/15/2010
1.1.2	Updated list of leveraged funds	9/15/2010*	11/15/2010
1.1.3	Updated list of permits	9/15/2010*	11/15/2010
1.2.1	CPR Report(s)	3/30/2012	Monthly
1.2.2	CPR deliverables identified in Scope of Work	3/30/2012*	4/16/2012
1.3.1	Written documentation of meeting agreements and all pertinent information	3/1/2012	3/1/2012
1.3.2	Schedule for completing closeout activities	3/9/2012	3/9/2012
1.4.1	Monthly Progress Reports	3/5/2012	Monthly
1.6.1.1	Draft Outline of the Final Report	1/31/2012*	3/16/2012
1.6.1.2	Final Outline of the Final Report	2/8/2012*	3/16/2012
1.6.2.1	Draft Final Report	2/29/2012*	3/24/2012
1.6.2.2	Final Report	3/30/2012*	4/16/2012
1.7.1	Letter regarding Leverage Funds or stating that no leverage funds are provided	12/30/2010	12/30/2010
2.1A	Implementation Plan	3/30/2012	3/30/2012
2.1B.1	Summary of Project Management Meetings (in monthly Progress Reports)	3/30/2012	Monthly
2.1B.2	Program Database	3/30/2012	Monthly
2.1B.3	Program Database Reports	3/30/2012	Monthly
2.1B.4	Project Monitoring Plan	3/30/2012*	4/27/2011
2.1B.5	Signed Participation Agreements	3/30/2012	Monthly

2.1B.6	**Monthly risk management report**	**3/30/2012***	**4/27/2011**
2.1B.7	**Monthly and final accounting reports**	**3/30/2012***	**4/9/2012**
2.1B.8	**Coordinated training schedules and workforce deployment**	**3/30/2012**	**Monthly**
2.1C.1	**Copies of Applicable Wage Determinations (Davis-Bacon Act compliance reports as applicable)**	**3/30/2012**	**Monthly**
2.1C.2	**Weekly Certified Payrolls**	**3/30/2012**	**Monthly**
2.1D.1	**SHPO Consultation Package**	**3/30/2012**	**Monthly**
2.1E.1	**Waste Management Plan**	**3/30/2012**	**Monthly**
2.2.1	**Marketing Plan Updates**	**1/27/2012**	**Monthly**
2.2.2	**Marketing Materials**	**1/27/2012**	**Monthly**
2.2.3	**Marketing and Outreach results summarized in Monthly Progress Reports**	**1/27/2012**	**Monthly**
2.2.4	**Retrofit Case Studies**	**1/27/2012****	**4/30/2012**
2.3.1	**Training Materials**	**12/15/2011**	**6/3/2011**
2.3.2	**Facility operator training summaries covered and attendees list**	**12/12/2011**	**6/3/2011**
2.3.3	**Implementer participation standards and protocols manual**	**12/15/2011**	**1/15/2011**
2.3.4	**Post-inspection reports for at least 20 percent of installations**	**12/15/2011**	**Monthly**
2.4.1	**Comprehensive energy audit reports for participating facilities**	**12/30/2011**	**Monthly**
2.5.1	**Verification report summarizing types of assistance and services provided to participating customers**	**2/22/2012****	**4/30/2012**
2.6.1	**Summaries of data review and recommendations to facility operators**	**3/9/2012**	**Ongoing, Monthly**
2.6.2	**Case studies of wireless technology**	**3/9/2012****	**4/30/2012**

2.8.1	**Verification report final savings and financial incentive amount**	**3/9/2012***	**4/30/2012**
2.8.2	**Proof of incentive payment to participant**	**3/9/2012***	**4/30/2012**

**NOTE: Indicated dates were put into place BEFORE the CEC signed the Standard Agreement with QuEST. The contract was signed after September 2010 which pushed back the deliverable dates for these line items. **There are a few deliverables toward the end of the program that were extended by the CEC.*

IX. BUDGET:

The Oakland Shines budget is detailed below:

Task #	Brief Description	Budgeted	Actual Expenditure
1.1	Attend Kick-off Meeting	$ 2,515	$ 2,515
1.2	CPR Meetings	$ 23,840	$ 23,840
1.3	Final Meetings	$ 8,623.50	$ 8,623.50
1.4	Monthly Progress Reports	$ 93,372	$ 93,372
1.6.1	Final Report Outline	$ 1,110	$ 1,110
1.6.2	Final Report	$ 28,272	$ 28,272
1.7	Identify & Obtain Leverage Funds	$ 2,490	$ 2,490
2.1	Project Administration	$ 255,936	$ 255,936
2.2	Project Marketing	$ 636,203	$ 636,203
2.3	Training	$ 343,490	$ 343,490
2.4	Facility Audits	$ 297,168	$ 297,168
2.5	Installation Assistance	$ 155,722	$ 155,722
2.6	Ongoing Monitoring	$ 404,424.50	$ 404,424.50
2.8	Verification	$ 2,849,014	$ 2,849,014
	TOTAL	5,102,180	5,102,180

Oakland Shines will spend the entire budgeted amount before April 30, 2012, the program end date.

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